

CLAIMS

1. A method of selecting the value of at least one radio resource management parameter ( $S_{PC}, S_{HO}, S_1, S_2, S_3, S_{TS}$ ) employed by base station control units (4) of a cellular radio communications network, wherein, for each base station (1) serving mobile stations (3) in a cell, values are obtained of at least one quantity (RXLEV, RXQUAL, DISTANCE, CIR) based on measurements made on radio channels in the cell, said quantity being compared to at least one associated parameter in a procedure for managing the radio resources allocated to the mobile stations, characterised in that a statistic is maintained of the values obtained for said quantity, and in that the value of said associated parameter is adapted for the cell in such a way that, according to the statistic, a determined fraction of the values obtained of said quantity are greater than the value of the associated parameter.

2. A method according to Claim 1, wherein said measurements on radio channels in the cell comprise measurements of the reception level (RXLEV) of radio signals transmitted in at least one direction between the base station (1) and mobile stations (3).

3. A method according to any one of the preceding claims, wherein said measurements made on radio channels in the cell comprise quality measurements (RXQUAL) of the reception of radio signals transmitted in at least one direction between the base station (1) and mobile stations (3).

4. A method according to any one of the preceding claims, wherein the obtaining of said quantity comprises estimating a channel-to-interferer ratio (CIR) at the base station (1) or at each mobile station (3).

5. A method according to any one of the preceding claims, wherein said measurements are made by the mobile

stations (3).

6. A method according to Claims 4 and 5, wherein the estimation of a channel-to-interferer ratio (CIR) at a mobile station comprises a comparison between the reception level (RXLEV DL), by the mobile station (3), of a signal transmitted by the base station (1) and the reception levels (RXLEV NCELL(n)), by the same mobile station, of signals transmitted on beacon frequencies by the base stations of a set of adjacent cells.

7. A method according to Claim 6, wherein said quantity (CIR) is the ratio between the level of reception (RXLEV DL) of said signal transmitted by the base station (1) and a sum of the reception levels (RXLEV NCELL(n)) of the signals transmitted on the beacon frequencies by the base stations of the adjacent cells.

8. A method according to Claim 7, wherein said sum is weighted as a function of colours of the adjacent cells in frequency reuse patterns of the network.

9. A method according to any one of Claims 1 to 4, wherein said measurements made on radio channels in the cell comprise measurements of a reception delay, by the base station (1), of signals transmitted by mobile stations (3).

10. A method according to any one of the preceding claims, wherein the statistic of the values obtained of said quantity (RXLEV, RXQUAL, DISTANCE, CIR) is based on first measurements obtained on a dedicated signalling channel (SDCCH) for each mobile station (3) spontaneously accessing the cell.

11. A method according to any one of the preceding claims, wherein said quantity is compared with an associated parameter ( $S_{PC}$ ) in a control procedure of the power transmitted on radio channels allocated to

communications between the base station (1) and mobile stations (3).

12. A method according to Claim 11, wherein the power control procedure is such that only the mobile stations  
5 for which the value obtained of said quantity is greater than the selected value of a first associated parameter ( $S_{PC}$ ) can be subjected to power limitation, and wherein said determined fraction is of 10 to 20 % for the adaptation of the first parameter ( $S_{PC}$ ).

10 13. A method according to Claim 12, wherein said quantity is further compared to a second associated parameter ( $S_{HO}$ ) in an inter-cell handover procedure, wherein the handover procedure is such that the mobile stations (3) for which the value obtained of said quantity  
15 is greater than the selected value of the second associated parameter are subjected to inter-cell handover, and wherein said determined fraction is lower for the adaptation of the second parameter ( $S_{HO}$ ) than for the adaptation of the first parameter ( $S_{PC}$ ).

20 14. A method according to any one of the preceding claims, wherein said quantity is compared to at least one associated parameter ( $S_1$ - $S_3$ ,  $S_{TS}$ ) in a selection procedure for radio channels allocated to communications between the base station and the mobile stations.

25 15. A method according to Claim 14, wherein the base station comprises a number M of transceiver units (TRX1-TRX4), one of which transmits on a beacon frequency, and wherein the radio channel selection procedure preferentially allocates channels on the beacon frequency  
30 to the mobile stations (3) for which the values obtained for said quantity are lower than an associated parameter ( $S_1$ ), the adaptation of which makes use of a determined fraction of the form  $100/M$  %.

16. A method according to Claim 14, wherein the base station comprises a number M of transceiver units (TRX1-TRX4), and wherein the radio channel selection procedure distributes the channels allocated to the mobile stations  
5 (3) based on comparisons between the values obtained of said quantity for said mobile stations and M-1 associated parameters ( $S_1$ - $S_3$ ), the adaptation of which makes use of the respective determined fractions of the form  $100 \times m/M \%$  for  $1 \leq m \leq M-1$ .

10 17. A method according to any one of the preceding claims, wherein said quantity is compared to an associated parameter ( $S_{HO}$ ) in an inter-cell or intra-cell handover procedure.

15 18. A method according to any one of the preceding claims, wherein the base station (1) comprises a plurality of transceiver units (TRX1-TRX4), and wherein the statistic for the values obtained for said quantity is maintained separately for each one of the transceiver units, in order to select independently the values of the  
20 associated parameter ( $S_{TS}$ ) for the different transceiver units, at least part of the radio resource management procedure being carried out for each one of the transceiver units.

25 19. A control unit for at least one base station (1) of a cellular radio communications network, comprising means (6) for performing management procedures of radio resources allocated to communications between the base station and mobile stations (3) in a cell served by said base station, characterised by means (10,11) for  
30 selecting, in accordance with a selection method according to any one of the preceding claims, the value of at least one parameter ( $S_{PC}, S_{HO}, S_1, S_2, S_3, S_{TS}$ ) used in at least one of said procedures in which values of a quantity (RXLEV, RXQUAL, DISTANCE, CIR) obtained from measurements made in

the cell on radio channels between the base station and the mobile stations are compared with said parameter, the selection means (10,11) being arranged to maintain a statistic of the values obtained of said quantity, and to  
5 adapt the value of said parameter in such a way that, based on the statistic, a determined fraction of the values obtained of said quantity are greater than the value of the associated parameter.